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VIRGINIA, OR MERRIMAC;
HER REAL PROJECTOR.

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A STATEMENT

OF THE FACTS CONNECTED WITH HER CONVERSION
INTO AN IRON-CLAD,

BY

JOHN M. BROOKE,

Late Commander, C. S. Navy.

REPRINTED FROM THE SOUTHERN HISTORICAL SOCIETY PAPERS, VOLUME XIX.

RICHMOND, VA.:
WM. ELLIS JONES, BOOK AND JOB PRINTER.
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VIRGINIA, OR MERRIMAC;

HER REAL PROJECTOR.

In the Richmond *Dispatch* of March 29th appeared an article, written by Mr J. W. H. Porter, under the supervision of Constructor John L. Porter, purporting to be a "correct version of the converting of the *Merrimac* into an iron-clad." Mr Porter says :

"In your issue of Sunday last, in the communication of Mr. Virginus Newton, headed 'The *Merrimac's* Men', there appears the following :

"'Upon this hulk, according to plans furnished by Lieutenant John M. Brooke, of the Confederate States Navy (though the merit of the design is also claimed for Naval Constructor John L. Porter), was built a house or shield,' &c.

"This does a grave injustice to a gallant old Confederate and Virginian, who sacrificed his all upon the altar of his country; and had Mr. Newton known fully the facts it is believed that he would have published his article with the names above reversed."

The following dispassionate statement of Colonel Brooke of the facts connected with the conversion of the *Merrimac* is conclusive:

In October, 1887, I was requested by the editor of the *Century* to prepare a note stating what my relations were to the construction of the *Merrimac*. This note, containing the only public reference to Mr. Porter or his claim that I have ever made, will be found in *Battles and Leaders of the Civil War*, Vol. I, p. 715; and on the following page a similar note by Constructor John L. Porter as to his relations. To these notes the attention of the reader is invited. But as the

book is not always accessible, and such versions of occurrences of the war as this of Mr. Porter sometimes find their way into crude histories of the day, I deem it proper to present the subject from another point of view, with evidence.

Early in June, 1861, Mr. Mallory, Secretary of the Confederate States Navy, asked me to design an iron-clad.

The first idea presenting itself was a shield of timber two feet thick, plated with three inches of iron, inclined to the horizontal plane at the least angle that would permit working the guns. This shield to be supported by a hull of equal length. But it was apparent, on inspection, that to support the massive shield the ends of the vessel would be so full and bluff as to prevent the attainment of speed. It then occurred to me that fineness of line, buoyancy, and protection of hull could be obtained by extending the ends of the vessel under water beyond the shield. To prevent the banking up of water on these submerged ends I erected upon them a superstructure of ship-iron, corresponding in form with the hull below, but not higher than would permit the free use of bow and stern guns; these superstructures to be decked.

Of this design I submitted outline drawings—body, sheer, and deck-plans—to Mr. Mallory, who approved and adopted them. I then asked that Chief Engineer Williamson and Constructor Porter should be sent for from the Norfolk navy-yard to put the plan in execution. This the Secretary declined doing, but ordered a practical mechanic to be sent up from the Norfolk yard. The mechanic came, aided in the statement of timber, etc., but was unable to make the working drawings, and was permitted to return to the yard. Constructor Porter and Chief Engineer Williamson were then ordered to report. They came, and we met in consultation with the Secretary. Mr. Porter brought and presented for consideration a model of an iron-clad of the same form as that which I had rejected for reasons above stated.

When we had examined the model, the Secretary said he wished to show Messrs. Porter and Williamson a plan proposed by Lieutenant Brooke. The plan was then placed before them, and the reasons for extending the ends of the hull beyond the shield and under water were stated, and they approved the plan. It had been, as stated above, previously adopted by the Department.

Mr. Mallory then directed Messrs. Williamson and Porter to ascertain if suitable engines and boilers could be had. To me he said: "Make a clean drawing in ink of your plan, to be filed in the department." As I placed the paper on the table and was about to begin,

Mr. Porter said to me: "You had better let me do that. I am more familiar than you are with that sort of work." Accepting his offer I went with Williamson to the Tredegar Works, where we learned that no suitable engines could be had. Williamson then said that the engines of the *Merrimac* could, he thought, be put in working condition, but that the vessel would necessarily have as great a draught as the *Merrimac*, and that it would be useless to build a new hull, as the lower part of the old one had not been destroyed, and the plan could be applied to her. In view of these facts, Constructor Porter, who also knew what the condition of the vessel was, agreed with us that the plan could be carried out on her. We all thought the draught too great, but we could not do better. We reported verbally to the Secretary; the subject was discussed, and his opinion coincided with ours. He then, in order that a record might be preserved, directed us to make a written report in accordance with the results of the discussion.

As the plan proposed by me had been adopted, I thought it but proper that I should leave the wording of the report to Messrs. Williamson and Porter. I noticed that in designating the plan to be adopted the expression used was "the plan submitted for the approval of the Department." *Which* plan was not stated.

I now pass to a later period. The action in Hampton Roads had been fought. Among the gallant officers of the *Virginia*, whose names are now historic, was Lieutenant Robt. D. Minor—a very pink of honor. He had been associated with me in ordnance work, and was fully informed as to the facts in this matter. From him I received the following letter. It has never been published and will, I think, be read with interest:

"NAVAL HOSPITAL, NORFOLK, VA., *March 11, 1862.*

"Many thanks, my dear Brooke, for your very kind letter, which reached me by to day's mail.

"You richly deserve the gratitude and thanks of the Confederacy for the plan of the now celebrated *Virginia*, and I only wish that you could have been with us to have witnessed the successful operations of this new engine of naval warfare, fostered by your care and watched over by your inventive mind.

"It was a great victory, though the odds were nearly seven to one against us in guns and in numbers. But the IRON and the HEAVY GUNS did the work, handled by such a man as glorious old Buchanan,

and with such officers and men as we had. The crash into the *Cumberland* was terrible in its effect, though hardly felt by us, and in thirty minutes after the first gun was fired by us she was at the bottom, with the top-sail yards just clear of the water.

"The *Congress* gave us her guns as we passed, but though the shot fell like hailstones on our roof, we passed on, and settled the *Cumberland* in short style. By this time our dear old beauty was in shoal water with her head up stream, and 'twas fully twenty minutes before we could turn her to fire well and rapidly on the *Congress*—meanwhile receiving the fire of the battery on the Point, though I cannot vouch for this exactly, for in such a row 'twas hard to say where in thunder all the licks came from.

"Very soon the *Congress* ran ashore—purposely, I suppose, to save herself from such a fate as the *Cumberland*—and we had not given her many shots before she hauled down the Stars and Stripes and soon afterwards hoisted the *white flag* at her peak.

"Parker and Alexander, in the *Beaufort* and *Raleigh*, were ordered to go to her, send her men on shore, bring the officers on board, and burn the ship; but on going alongside, Pendergrast (Austin) surrendered the ship to Parker, and told him that he had too many wounded to burn the ship. Billy told him to have the wounded removed at once; and while the *Raleigh* and *Beaufort* were at this *humane* work the Yankees on shore opened fire on them, killing some of their own men, among them a lieutenant.

"Parker and Alexander then left her with some twenty or thirty prisoners, the fire from shore being too hot; and as Alexander backed out in the *Raleigh* he was fired at from the ports of the *Congress*, though she had surrendered to us. A dastardly, cowardly act! Buchanan not getting Parker's report, and the frigate not being burnt, he accepted my volunteered services to burn her; and, taking eight men and our only remaining boat, I pulled for her, with Webb in the gallant little *Teazer* steaming up soon afterwards to cover me. In the meantime the *Patrick Henry*, *Jamestown*, and *Teazer* had come splendidly into action just about the time or a little before the *Congress* struck, and when I left the old beauty they were doing grand work with their guns on the *Minnesota* and shore batteries.

"I did not think the Yankees on shore would fire at me on my errand to the *Congress*, but when in about two hundred and fifty yards of her they opened on me from the shore with muskets and artillery;

and the way the balls danced around my little boat and crew was lively beyond all measure. Soon two of my men were knocked over, and, while cheering them on I got a clip through the side which keeled me up for a second or two; but I was soon on board the *Teazer*, Webb having very bravely come to my protection. Old Buch., seeing what the scoundrels were doing, made our recall, and deliberately backing the *Virginia* up stream poured gun after gun, hot shot and incendiary shells into her stern and quarter, setting her on fire; but while doing this he was knocked over by a minnie ball through his left thigh, and the medicos laid us together in the cabin, while brave, cool, determined old Jones fought the action out in his quiet way, giving them thunder all the time.

"As you supposed, the *Minnesota* and *Roanoke* came to the assistance of the two sailing frigates, but the former got aground, and the latter *ran*—actually turned tail, and, as the sailors say, 'pulled foot' for Old Point. The *St. Lawrence* got a dose and cleared out, leaving the *Minnesota* alone in her sad plight, hard and fast aground, with some tugs trying to lighten her, and taking the fire from our squadron, to which she replied as well as she could, generally from her forward pivot gun. She being aground, and night coming on, of course Jones could not carry on the fight, and after a hard night of it the Commodore and I were landed early on Sunday morning at Seawell's Point, and Jones took the ship into action that day, fighting her like a bold seaman, as he is. He must tell you of his tussle with the *Eric*, a very devil of an iron battery, for he has just come in and said he had a letter from you. God bless old Buchanan for a true-hearted patriot and bold, dashing sailor, as brave as brave can be; but he exposed himself entirely too much, and was struck by a musket or minnie ball while on the upper deck, I believe, for I was under the doctor's hands then, and could not be with him at the time. I am writing in bed, and by 'fits and starts,' so excuse all inaccuracies and want of details, of which I will tell you when we meet.

"Mrs. Minor is with me, and I am decidedly more comfortable, though my wound is a severe but not dangerous one. The ball struck a rib and glanced, coming out over the heart. It knocked me down for a second or so, but I got up and cheered my men, some of whom were panic-stricken by the shower of balls, though they rallied when I got them to the *Teazer*.

"Send the signal book! When I can be moved the doctors will

send me to Richmond, where a 'spell' of a few weeks will put me on my pins again. Make my kind regards to Mrs. Brooke; and with the hope that you are in better health,

"I am ever your friend,

"R. D. MINOR.

"Remember me to Volcke, to McCorkle, and Upshur. The Commodore had the signal '*Sink before Surrender*' arranged before the action. Tell this to Mallory, for I hardly think that old Buch. will ever do so.

"N. B.—There will doubtless be an attempt made to transfer the great credit of *planning* the *Virginia* to other hands than your own. So look out for them, for to you it belongs, and the Secretary should say so in communicating his report of the victory to Congress.

"By no means must any captain or commodore or even flag-officer be put over Jones. In old Buch.'s sickness from his wound Jones must command the ship."

In justice to Constructor Porter, and in order that his claim and the grounds upon which it is based may be fully set forth, his published letters, with their true dates of publication, are now presented, with such other matter, arranged in order of sequence, as may be necessary to the preservation of historical accuracy and the development of the process by which he arrived at the conclusion that he was "not only the *constructor* but the originator of the plan of the *Virginia*."

In the *Charleston Mercury* of March 19, 1862, the following extract from a private letter written by Constructor Porter was published:

"I received but little encouragement from any one while the *Virginia* was progressing. Hundreds, I may say thousands, asserted she would never float. Some said she would turn bottom side up; others said the crew would suffocate; and the most wise said the concussion and report from the guns would deafen the men. Some said she would not steer; and public opinion generally about here said she would never come out of the dock. You have no idea what I have suffered in mind since I commenced her, but I knew what I was about, and I persevered. Some of her inboard arrangements are of the most intricate character, and have caused me many sleepless nights in making them, but all have turned out right, and thanks

are due to a kind Providence whose blessings on my efforts I have many times invoked. I must say I was astonished at the success of the *Virginia*. She destroyed the *Cumberland* in fifteen minutes, and in thirty more the *Congress* was captured. The *Minnesota* would have shared the same fate, but she got aground, and the *Virginia* could not get at her."

In the *Whig* of March 22, appeared the following letter:

"THE VIRGINIA.

"RICHMOND, *March 18, 1862.*

"*To the Editor of the Whig:*

"As the brilliant success of the *Virginia* has attracted the attention of all the country, and is destined to cast much glory on our infant navy, it may be of general interest to publish some account of the origin of this magnificent ship.

"On the 23d of June a board consisting of W. P. Williamson, chief engineer; John M. Brooke, lieutenant; and John L. Porter, naval constructor; met in Richmond by order of the Secretary of the Navy to determine a plan for the construction of an iron-clad vessel. The Secretary of the Navy was himself present at the meeting of the board. After full consultation a plan proposed by Lieutenant John M. Brooke was adopted, and received the full approval of the Secretary of the Navy.

"The plan contemplated the construction of a light-draft vessel, but the means at our command being limited, many reasons induced them to take the *Merrimac* and alter her according to the plan adopted. Her boilers were good, and her engines only partially destroyed, and could be repaired in less time than would be required to construct an engine for a new vessel of light draft. It was found that the plan of Lieutenant Brooke could easily be applied to the *Merrimac*, and, in fact, no other plan could have made the *Merrimac* an effective ship. Her guns now command every point of the horizon.

"A report was made up by the above-named officers to the Secretary of the Navy on the 25th of June, in accordance with these facts, and the Secretary ordered the work to commence forthwith.

"Experiments to determine the mode of applying the armor and to fix the dimensions of its parts were conducted by Lieutenant Brooke.

"From the moment that the plan was adopted the Secretary of the

Navy urged the work forward with all the means at the command of the government and without regard to expense; and from this day to the day of the *Virginia's* egress from the dock there were from one thousand to fifteen hundred men employed on her.

"The four rifled cannon used so effectively on the *Virginia* were of a plan entirely new, designed by Lieutenant Brooke.

"Most of the foregoing facts came to my knowledge long before the completion of the ship; others I have obtained recently from reliable sources.

"I am a private citizen, wholly unconnected with the Confederate or State government, but think that the public ought to know all these particulars, which reflect so much credit on the Secretary of the Navy and his officers. "JUSTICE."

"*Justice*" was in error in using the word "board." As will be seen, in the Secretary's report to the House of Representatives of the Confederate States, "The Department ordered Chief Engineer Williamson and Constructor Porter from the navy yard at Norfolk to Richmond for consultation on the same subject generally [Lieutenant Brooke's design, approved by the Department], and to aid in the work."

The Secretary himself took part in the consultations, and directed us to put in writing the conclusions arrived at. Had we constituted a board it would so have appeared on the face of the report. Constructor Porter adopted the word "board" in his reply to "*Justice*," and thereafter used it as the best suited to his purpose.

A reply elicited by this article appeared in the *Examiner* of April 3d:

"THE VIRGINIA.

"GOSPORT NAVY-YARD, *March 29, 1862.*

"*To the Editor of the Examiner:*

"Having seen an article in the Richmond *Enquirer*, and one also in the *Whig*, claiming the plan of the iron-clad ship *Virginia* for Lieutenant John M. Brooke, of the navy, thereby doing myself and Engineer Williamson the greatest injustice, I feel called upon to make a statement of facts in the case, for the further information of the reading public, in the history of this ship.

"In June last Lieutenant Brooke made an attempt to get up a floating battery at the Navy Department. The Secretary sent to

this yard for the master ship-carpenter to come up and assist him. After trying for a week he failed to produce anything, and the master-carpenter returned to his duties at the yard. Secretary Mallory then sent for me to come to Richmond, at which time I carried up the model of an iron-clad floating battery, with the shield of the present *Virginia* on it, and before I ever saw Lieutenant Brooke. This model may now be seen at the Navy Department.

"The Secretary then ordered a board, composed of Engineer Williamson, Lieutenant Brooke, and myself, to examine and report upon some plan for a floating iron-clad battery [consult Secretary's Report]. 'Justice,' in his communication to the *Whig*, says: 'After full consultation a plan proposed by Lieutenant John M. Brooke was adopted, and received the approval of the Secretary of the Navy; that it was found the plan of Lieutenant Brooke could easily be applied to the *Merrimac*, and, in fact, no other plan could have made the *Merrimac* an effective ship, and that a report was made to the Secretary of the Navy in accordance with these facts.'

"Now, I would only ask a careful reading of this report, and see how far it agrees with the statement of 'Justice.'

"Now, I would ask what becomes of the statement of 'Justice'? And I would also ask any one at all acquainted with the circumstances how Lieutenant Brooke could have had anything to do with this report further than signing his name to it. What did he know about the condition of the *Merrimac* or her engines, or whether there was enough of her left to make a floating battery out of or not; or anything about what it would cost, or anything else about her? For he had not even seen her, and knew nothing of her condition really.

"NAVY DEPARTMENT, *Richmond, June 25, 1861.*

"SIR:

"In obedience to your order, we have carefully examined and considered the various plans and propositions for constructing a shot-proof steam battery, and respectfully report that, in our opinion, the steam frigate *Merrimac*, which is in such condition from the effects of fire as to be useless for any other purpose without incurring a very heavy expense in her rebuilding, can be made an efficient vessel of that character, mounting ten heavy guns—two pivot and eight side guns of her original battery; and, from the further consideration that we cannot procure a suitable engine and boilers for any other vessel without building them, which would occupy too much time, it

would appear that this is our only chance to get a suitable vessel in a short time.

“ ‘The bottom of the hull, boilers, and heavy and costly parts of the engine being but little injured, reduce the cost of construction to about one-third of the amount which would be required to construct such a vessel anew.

“ ‘We cannot, without further examination, make an accurate estimate of the cost of the proposed work, but think it will be about one hundred and ten thousand dollars, the most of which will be for labor, the materials being nearly all on hand in the yard, except the iron plating to cover the shield.

“ ‘The plan to be adopted in the arrangement of the shield for glancing shot, mounting guns, arranging the hull and plating to be in accordance with the plan submitted for the approval of the Department.

“ ‘We are, with much respect,

“ ‘Your obedient servants,

“ ‘WILLIAM P. WILLIAMSON, *Chief Engineer,*

“ ‘JOHN M. BROOKE, *Lieutenant,*

“ ‘JOHN L. PORTER, *Naval Constructor.*’

“The concluding part of the report states that the whole arrangements were to be made in accordance with the plan submitted.

“The facts are that no plan was submitted with this report. After the report was made, I returned immediately to the Norfolk navy yard, and made the plans of the *Virginia* myself, and, unaided by any one, placed the very same shield on her which was on the model I carried up with me before this board met. On the 11th day of July I returned to Richmond with this drawing, and presented it to Secretary Mallory, who immediately wrote the following order for the work with his own hand and gave it to me:

[Copy.]

“ ‘NAVY DEPARTMENT, RICHMOND, *July 11, 1862.*

“ ‘*Flag-officer* F. FORREST:

“ ‘*Sir*: You will proceed with all practicable dispatch to make the changes in the form of the *Merrimac*, and to build, equip and fit her in all respects according to the design and plans of the constructor

and engineer, Messrs. Porter and Williamson. As time is of the first importance in the matter, you will see that the work progresses without delay to completion [*italics Porter's*].

“S. R. MALLORY,
“*Secretary Confederate States Navy.*’

“Lieutenant Brooke is not even hinted at in this letter. After the ship had been in progress for six weeks the Secretary wrote the following letter to Flag-officer Forrest on the subject:

[Copy.]

“CONFEDERATE STATES NAVY DEPARTMENT,
“RICHMOND, *August 19, 1861.*

“*Flag-officer* FRENCH FORREST,
“*Commanding Navy Yard, Gosport, Va.*

“SIR: The great importance of the service expected from the *Merrimac*, and the urgent necessity of her speedy completion, induce me to call upon you to push forward the work with the utmost dispatch. Chief Engineer Williamson and Constructor Porter, severally in charge of the two branches of this great work and for which they will be held specially responsible, will receive, therefore, every possible facility at the expense and delay of every other work on hand, if necessary.

“(Signed) S. R. MALLORY,
“*Secretary Confederate States Navy.*’

“Of the great and skillful calculations of the displacements and weights of timber and iron involved in the planning and construction of this great piece of naval architecture, and of her present weights with everything on board, no other man than myself has, or ever had, any knowledge. If he has let him show it; for, while public opinion said she would never float, none, save myself, knew to the contrary, or what she was capable of bearing.

“After the *Merrimac* was in progress for some time Lieutenant Brooke was constantly proposing alterations in her to the Secretary of the Navy, and as constantly and firmly opposed by myself, which the Secretary knows. To Engineer Williamson, who had the exclusive control of the machinery, great credit is due for having so improved the propeller and engines as to improve the speed of the ship three knots per hour.

"I never thought for a moment that, after the many difficulties I had to encounter in making these new and intricate arrangements for the working of this novel kind of ship that any one would attempt to rob me of my just merits; for, if there was any other man than myself who had any responsibility about her success or failure I never knew it, only so far as the working of the machinery was concerned, for which Engineer Williamson was alone responsible.

"I hope these plain statements of facts will satisfy the people of this government as to who is entitled to the plan of the *Virginia*.

"JOHN L. PORTER,
"C. S. N. Constructor."

On the 3d of April, I wrote a private letter to Mr. Porter which, so far as I know, has never been published.

[Copy.]

"RICHMOND, *April 3, 1862.*

"DEAR SIR :

"I have observed, with surprise and regret, certain articles in the newspapers relating to the *Virginia* and the origin of the plan upon which she is constructed. I shall leave to those qualified to judge the question of whose plan was adopted; for the facts are accessible. But meanwhile I beg leave to call your attention to one remark of your published letter, which is rather obscure. You say:

"'After the *Merrimac* was in progress some time, Lieutenant Brooke was constantly proposing alterations in her to the Secretary of the Navy, and as constantly and firmly opposed by myself, which the Secretary knows.'

"This paragraph conveys the impression that I proposed alterations which were opposed and rejected. As the alterations alluded to affect very materially the efficiency of the ship, I propose to mention them now.

"The first alteration proposed by me was the substitution of one plate of two-inch iron for two of one-inch; the removal of the ceiling or inner planking of the shield, and the application of four inches of oak outside under the iron, leaving the wood of the shield of the same aggregate thickness; and this alteration was made. I subsequently recommended the substitution of two-inch plates.

"The third proposition made by me was to pierce the shield for bow and quarter ports, for you had omitted them, leaving four points of

approach without fire. An accident to the engine, propeller or rudder would have placed the ship at the mercy of an antagonist ; and this alteration was made.

"The fourth alteration was the removal of the wheel-ropes—chains—from beneath the plates outside, where they were liable to be jammed by a shot. Mr. Robert Archer was present when I called your attention to this liability. The alteration was not made, however, until Lieutenant Jones called your attention to it a second time.

"The fifth alteration was the making of two additional hatches—your plan of detail providing for only two.

"The sixth suggestion was that arrangements should be made to permit the use of small-arms. You were left to your discretion, but a plan was given, if you could not think of a better one. You replied at length ; the arguments were not considered good, and the alteration would have been made but for the delay which would have attended it. The ship is now deficient in that respect.

"The sixth proposition was to put six inches of iron on bow and stern. Approved by the Secretary but omitted, from your statement that the ship would not carry it.

"JOHN M. BROOKE,
"Lieutenant, C. S. Navy."

The faulty arrangement of the wheel-ropes was brought to my notice by Lieutenant Jones. A similar arrangement was the immediate cause of the loss of the iron-clad *Tennessee*.

On the 4th of April Secretary Mallory's report to the House of Representatives appeared in the *Examiner*:

"CONFEDERATE STATES NAVY DEPARTMENT,
"RICHMOND, *March 29, 1862.*

"Hon. THOMAS S. BOCK,COCK,
"Speaker of the House of Representatives :

"SIR: In compliance with the resolution adopted by the House of Representatives on the 18th instant, 'That the Secretary of the Navy be requested to make a report to this House of the plan and construction of the *Virginia*, so far as the same can be properly communicated, of the reasons for applying the plan to the *Merrimac*, and also what persons have rendered especial aid in designing and building the ship,' I have the honor to reply that on the 10th day of June, 1861, Lieutenant John M. Brooke, Confederates States Navy,

was directed to aid the Department in designing an iron clad war vessel and framing the necessary specifications. He entered upon this duty at once, and a few days thereafter submitted to the Department, as the result of his investigations, rough drawings of a casemated vessel, with submerged ends and inclined iron-plated sides. The ends of the vessel, and the eaves of the casemate, according to his plan, were to be submerged two feet; and a light bulwark, or false bow, was designed to divide the water and prevent it from banking up on the forward part of the shield with the vessel in motion, and also to serve as a tank to regulate the ship's draft. His *design* was approved by the department, and a practical mechanic was brought from Norfolk to aid in preparing the drawings and specifications. This mechanic aided in the statement of details of timber, etc., but was unable to make the drawings, and the Department then ordered Chief Engineer Williamson and Constructor Porter, from the navy yard at Norfolk, to Richmond, about the 23d of June, for consultation on the same subject generally, and to aid in the work. Constructor Porter brought and submitted the model of a flat-bottomed, light-draft propeller casemated battery, with inclined iron-covered sides and ends, which is deposited in the Department. *Mr. Porter and Lieutenant Brooke have adopted for their casemate a thickness of wood and iron, and an angle of inclination nearly identical.* Mr. Williamson and Mr. Porter approved of the plan of having submerged ends *to obtain the requisite flotation and invulnerability, and the Department adopted the design, and a clean drawing was prepared by Mr. Porter of Lieutenant Brooke's plan, which that officer then filed with the Department.* The steam frigate *Merrimac* had been burned and sunk, and her engine greatly damaged by the enemy, and the Department directed Mr. Williamson, Lieutenant Brooke, and Mr. Porter to consider and report upon the best mode of making her useful. The result of their investigations was *their recommendation of the submerged ends and the inclined casemates for this vessel*, which was adopted by the Department.

"The following is the report upon the *Merrimac* :

"In obedience to your orders we have carefully examined and considered the *various plans* and propositions for constructing a shot-proof steam battery, and respectfully report that, in our opinion, the steam frigate *Merrimac*, which is in such condition from the effects of fire as to be useless for any other purpose without incurring a very heavy expense in rebuilding, etc., can be made an efficient vessel of

that character, mounting * * * * heavy guns; and from the further consideration that we cannot procure a suitable engine and boiler for any other vessel without building them, which would occupy too much time, it would appear that this is our only chance to get a suitable vessel in a short time. The bottom of the hull, boilers and heavy and costly parts of the engine being but little injured, reduce the cost of construction to about one-third of the amount which would be required to construct such a vessel anew. We cannot, without further examination, make an accurate estimate of the cost of the proposed work, but think it will be about ———, the most of which will be for labor, the materials being nearly all in the navy-yard, except the iron plating to cover the shield. The plan to be adopted in the arrangement of the shield for glancing shot, mounting guns, arranging the hull, etc., and plating, to be in accordance with the plan submitted for the approval of the Department.

“‘We are, with much respect, your obedient servants,

“‘WILLIAM P. WILLIAMSON,

“‘*Chief Engineer Confederate States Navy,*

“‘JOHN M. BROOKE,

“‘*Lieutenant, Confederate States Navy,*

“‘JOHN L. PORTER,

“‘*Naval Constructor.*’

“Immediately upon the adoption of the plan Porter was directed to proceed with the constructor’s duties. Mr. Williamson was charged with the engineer’s department, and to Mr. Brooke were assigned the duties of attending to and preparing the iron and forwarding it from the Tredegar Works, the experiments necessary to test the plates and determine their thickness, and devising heavy rifled ordnance for the ship, with the details pertaining to ordnance. Mr. Porter *cut the ship down, submerged her ends*, performed all the duties of constructor, and *originated all the interior arrangements by which space has been economized*; and he has exhibited energy, ability and *ingenuity*. Mr. Williamson thoroughly overhauled her engines, supplied deficiencies and repaired defects, and improved greatly the motive power of the vessel. Mr. Brooke attended daily to the iron, constructed targets, ascertained by actual tests the resistance offered by inclined planes of iron to heavy ordnance, and determined interesting and important facts in connection therewith, and which were of great importance in the construction of the ship; devised and prepared the models and drawings of the ship’s heavy ordnance, being

guns of a class never before made and of extraordinary power and strength.

"It is deemed inexpedient to state the angle of inclination, the character of the plates upon the ship, the manner of preparing them, or the number, calibre and weights of the guns; and many novel and interesting features of her construction, which were experimentally determined, are necessarily omitted.

"The novel plan of submerging the ends of the ship and the eaves of the casemate, however, is the peculiar and distinctive feature of the *Virginia*. It was never before adopted. The resistance of iron plates to heavy ordnance, whether presented in vertical planes or at low angles of inclination, had been investigated in England before the *Virginia* was commenced, and Major Barnard, U. S. A., had referred to the subject in his *Sea-Coast Defences*. We were without accurate data, however, and we were compelled to determine the inclination of the plates and their thickness and form by actual experiment.

"The Department has freely consulted the three excellent officers referred to throughout the labors on the *Virginia*, and they have all exhibited signal energy and zeal.

"I have the honor to be,

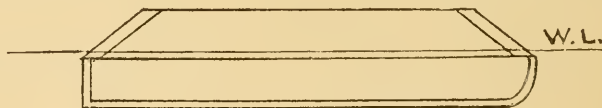
"Very respectfully,

"Your obedient servant,

"S. R. MALLORY,

"*Secretary of the Navy.*"

[*Italic's mine.*]



On the 11th of April the *Examiner* published Mr. Porter's reply to the Secretary's report.

"WHO PLANNED THE VIRGINIA?"

"NAVY YARD, GOSPORT, April 8, 1862.

"To the Editor of the *Examiner* :

"Under this caption I find in the *Examiner* of the 4th instant a report of the Secretary of the Navy to Congress, giving a detailed statement of the origin of the iron-clad *Virginia*.

"I feel sorry to have to reply to this report, inasmuch as it is published over the signature of the Secretary; and my friends will not fail to see the embarrassing position it places me in, in consequence of my relations with the Navy Department, and furthermore my intercourse with the Secretary since I have held my present position in the Southern Confederacy has been of the most friendly kind; but justice to myself requires that I should reply to it.

"The report commences by stating that on the 10th of June Lieutenant Brooke was directed to aid the Department in designing an iron-clad war vessel and framing the necessary specifications, and in a few days submitted to the Department rough drawings of a casemated vessel with submerged ends and inclined iron-plated sides, the ends of the vessel and the eaves of the casemates to be submerged two feet. I do not doubt the statements of the Secretary, but no such plans were submitted to the board; and from the fact that the master-carpenter had returned to this yard without completing any plan as the vessel shows, and myself being sent for immediately, and from the further fact that the Secretary presented us no plans from this source, I stated in my last communication that Lieutenant Brooke failed to produce anything after a week's trial; and I am still of that opinion, so far as anything tangible is concerned.

"The report states that the practical mechanic who was brought up from Norfolk was unable to make the drawings for Lieutenant Brooke, and the Department then ordered Chief-Engineer Williamson and Constructor Porter from the navy-yard at Norfolk to Richmond, about the 23d of June, for consultation on the same subject generally, and to aid in the work. I do not understand this part of the report exactly; but if it is intended to convey the idea that we were to examine any plan of Lieutenant Brooke's, I never so understood it, neither did we act in accordance with any such idea, as our report will show.

"The report next refers to my model, which I carried up with me, the shield and plan of which is carried out on the *Virginia*; but the report seems to have lost sight of the fact that the eaves and ends of my model were submerged two feet—precisely like the present *Virginia*.

"The ship was cut down on a straight line fore and aft, to suit this arrangement, and the shield was extended over her just as far as the space inside to work the guns would admit of. Where the shield stopped, a strong deck was put in to finish out the ends and plated

over with iron, and a rough breakwater built on it to throw off the water forward. The report next states that Mr. Porter approved of the plan of submerged ends, and made a clean drawing of Lieutenant Brooke's plan, which that officer then filed with the Department. How could I disapprove of my own model, which had submerged ends two feet? And the only drawing I ever made of the *Virginia* was made in my office at this navy-yard, and which I presented to the Department on the 11th day of July, just sixteen days after this board adjourned, having been ordered to Richmond on other business. This drawing and plan I considered my own, and not Lieutenant Brooke's. So soon as I presented this plan the Secretary wrote the following order, when everything was fresh in his mind concerning this whole matter:

“‘NAVY DEPARTMENT, *Richmond, July 11, 1862.*

“‘ *Flag-Officer F. FORREST:*

“‘SIR: You will proceed with all practicable despatch to make the changes in the form of the *Merrimac*, and to build, equip and fit her in all respects according to the design and plans of the constructor and engineer, Messrs. Porter and Williamson.

“‘S. R. MALLORY,
“‘ *Secretary Confederate States Navy.*’

“What, I would ask, could be more explicit than this letter, or what words could have established my claims any stronger if I had dictated them. The concluding part of this report says: ‘The novel plan of submerging the ends of the ship and the eaves of the casemate, however, is the peculiar and distinctive feature of the *Virginia*.’ This may be all true, but it is just what my model calls for; and if Lieutenant Brooke presented rough drawings to the Department carrying out the same views, it may be called a singular coincidence. And here I would remark that my model was not calculated to have much speed, but was intended for harbor defence only, and was of light draft, the eaves extending over the entire length of the model, and submerged all around two feet—sides and ends—and the line on which I cut the ship down was just in accordance with this; but if Lieutenant Brooke's ideas, which were submitted to the Secretary in his *rough drawings*, had have been carried out, to cut her

ends down low enough to build tanks on to regulate the draft of the vessel, she would have been cut much lower than my plan required; for all the water which now covers her ends would not alter her draft over three inches if confined in tanks. All the calculations of the weights and displacements, and the line to cut the ship down, were determined by myself, as well as her whole arrangements.

"That Lieutenant Brooke may have been of great assistance to the Department in trying the necessary experiments to determine the thickness of the iron, getting up the battery, and attending to the shipment of the iron, etc., I do not doubt; but to claim for him the credit of designing the ship is a matter of too much interest to me to give up.

"Engineer Williamson discharged his duties with great success; the engines performed beyond his most sanguine expectations, and these, with the improvements of the propeller, has increased her speed three miles an hour.

"The Confederacy is under many obligations to Secretary Mallory for having approved the report of this board, in making the *Merrimac* a bomb proof ship. Her performance has changed the whole system of naval defences, so far as wooden ships are concerned.

"Europe, as well as America, will have to begin anew; and that nation which can produce iron-clad ships with the greatest rapidity will be the mistress of the seas.

"In this communication I disclaim any disrespect to the Secretary of the Navy whatever; he has not only been my friend, in this Government, but was a true and serviceable one under the United States Government, and has rendered me many acts of kindness, for which I have always esteemed him; but the present unpleasant controversy involves a matter of so much importance to me that I shall be excused for defending my claim not only as the *constructor* but the originator of the plan of the *Virginia*.

"JOHN L. PORTER,
"Confederate States Navy Constructor." •

"No such plans were submitted to the board."

"The Secretary presented us no plans from this source."

Mr. Porter may have supposed that the direction of the Secretary to consider and report upon the best mode of making the *Merrimac* useful was equivalent to appointing us members of a board, and as the plan had already been submitted, he could say that it had not

been presented to the *board*. Yet Mr. Porter signed the report, stating that we had carefully considered *various* plans. There were but two plans presented—mine, illustrated by outline drawings; and Mr. Porter's, illustrated by his model.

"I stated in my last communication that Lieutenant Brooke failed to produce anything after a week's trial; and I am still of that opinion, so far as anything tangible is concerned."

Constructor Porter was at the Norfolk navy-yard, and could have no personal knowledge of what occurred in Richmond. His expressed opinion is based upon the fact that the master-carpenter had returned to the yard without completing any plan, "as the vessel shows, and himself being sent for immediately." The expression "as the vessel shows," meaning, *like the Virginia*, implies that the master-carpenter had in mind some plan not embracing her novel and characteristic feature. He was fully informed as to this feature and had been strictly enjoined not to divulge it.

Constructor Porter seems to have discovered, in this connection, the ambiguity of the unqualified phrase, "submerged ends of the vessel and eaves of the shield" when he presented his model; for he subsequently wrote: "How could I disapprove of my own model, which had submerged ends two feet?" And again: "The report seems to have lost sight of the fact that the eaves and ends of my model were submerged two feet—*precisely like the present Virginia*."

"If it is intended to convey the idea that we were to examine any plan of Lieutenant Brooke's, I never so understood it; neither did we act in accordance with any such idea, as our report will show."

Neither Mr. Porter nor Mr. Williamson was sent for to examine Lieutenant Brooke's plan.

It had been approved by the Department, but the Secretary preferred to send for some other person than Constructor Porter to put it in execution. The one who came from the Norfolk navy-yard was a subordinate in the Department of which Constructor Porter was the head.

"The report next refers to my model, which I carried up with me, the shield and plan of which is carried out on the *Virginia*; but the report seems to have lost sight of the fact that the eaves and ends of my model were submerged two feet—precisely like the present *Virginia*."

The plan of Mr. Porter's model could not have been carried out on the *Merrimac*, except by extending the shield to cover *her* ends.

"The report next states that Mr. Porter approved of the plan of submerged ends, and made a clean drawing of Lieutenant Brooke's plan, which that officer then filed with the Department." Note the reply. "How could I disapprove of my own model which had submerged ends two feet." Here Mr. Porter does not deny that he made a clean drawing of Lieutenant Brooke's plan. He virtually admits that he made the drawing, and that it had submerged ends. In what sense were the ends of his *model* submerged when compared with the *extended* submerged ends of Lieutenant Brooke's plan?

"And the only drawing I ever made of the *Virginia* was made in my office in this navy-yard, and which I presented to the Department on the 11th day of July. * * * This drawing and plan I considered my own, and not Lieutenant Brooke's plan. So soon as I presented this plan the Secretary wrote the following order, when everything was fresh in his mind concerning the whole matter."

The "drawing" or "plan" presented by Mr. Porter was simply a working plan, giving, from actual measurement in feet and inches, the relative dimensions of the various parts of the structure, in conformity with the design adopted by the Department. The order has no reference to the *origin* of the design. Chief Engineer Williamson's plans are embraced in the order. As well might he have claimed by this order to be the originator of the design of the engines.

The Secretary says: "Mr. Porter cut the ship down, submerged her ends, performed all the duties of constructor, and *originated* all the *interior* arrangements by which space has been economized."

The Secretary has nowhere said that Mr. Porter originated the design or plan applied to the *Merrimac*.

The concluding part of this report says:

"The novel plan of submerging the ends of the ship and the eaves of the casemate, however, is the peculiar and distinctive feature of the *Virginia*.' This may be all true, but it is just what my model calls for.'"

The submerged ends of the ship, the Secretary refers to as novel, were ends extending beyond the shield under water to obtain speed, buoyancy and protection by submergence.

“And if Lieutenant Brooke presented rough drawings to the Department carrying out the same views, it may be called a singular coincidence.”

This singular coincidence becomes significant, but less singular, when considered in connection with the return of the ship-carpenter to the yard, *prior to the construction of Mr. Porter's model.*

Mr. Porter then describes his model correctly: “Submerged all 'round two feet—sides and ends”—and then proceeds to say, “and the line on which I cut the ship down was just in accordance with this.”

But *this* was the characteristic or novel feature of Lieutenant Brooke's plan, which the constructor had been ordered to put in execution. Mr. Porter ignores the existence of the original plan, and overlooks the fact that the extension of the submerged ends in that plan was not made to suit the shield, but to obtain buoyancy, speed and protection. It was not necessary to *submerge* the ends of the vessel in order to submerge the eaves of the shield.

“But if Lieutenant Brooke's ideas, which were submitted to the Secretary in his rough drawings, had been carried out, low enough to build tanks on to regulate the draft of the vessel, she would have been cut much lower than my plan.”

Constructor Porter knew that the depth of submergence was two feet, and that to use the superstructures as tanks to regulate the draft was merely incidental; they were to be filled with water at fighting draft and emptied, if necessary, to diminish it.

Extracts from these three letters of Mr. Porter will be found in J. Thomas Scharf's *History of the Confederate States Navy*, published in 1887, pp. 146-151.

The last in order is the extract from a private letter, given above, which, Mr. Scharf says, was published in the *Charleston Mercury* of April 8th, 1862.

Knowing that this extract, the first publication connecting Mr. Porter's name with the *Merrimac*, had appeared at an earlier date, I wrote to Colonel Joseph Yates, whom I had known as one of the

gallant defenders of Charleston, and an accomplished artilleryman, requesting him to ascertain the date of publication. He replied as follows:

"TEN-MILE MILL, S. C., *August 10, 1887.*

"I find that all the files of the Charleston *Mercury* are in the Charleston library, and not one paper missing. There is a great deal said about the '*Virginia*' and her fights, and I find the letter you refer to was published in the *Mercury* dated March 19th, 1862, no date given to the writing of the same. You have an exact copy, as quoted to me in your letter of August 3d. * * *

"Yours truly,

"JOSEPH A. YATES."

The order of date of publication of the three extracts from Mr. Porter's letters is reversed in Scharf's history. My note-book, kept at that time, contains, under date of March 20th, 1862, this remark:

"Several papers have published articles from the Norfolk *Day-Book*, giving the credit of the plan of the *Merrimac* to John L. Porter."

The extraordinary character of this extract fixed it in my memory as the *first* in which Mr. Porter was brought before the public. It attracted attention, and the statement of "Justice" appeared.

Mr. J. W. H. Porter's "Correct Version of the Converting of the *Merrimac* into an Iron-clad" is, in the main, a repetition of what was published in 1862, with some variations and additions. Mr. J. W. H. Porter says:

"Lieutenant John M. Brooke, of the navy, was considering the question of an iron-clad. He was in a position where he could command the ear of Secretary Mallory, of the Confederate Navy, and at his request Mr. Joseph Pierce, then master ship-carpenter at the navy-yard here and a skilled mechanic, was sent to the Capital to assist him, but nothing came of the conference, and he reported that Lieutenant Brooke had no matured plan; that he had no practical ideas, and did not know what he wanted. Seeing the failure of Lieutenant Brooke's scheme, Constructor Porter *then* had another model made like the one he made at Pittsburg in 1847." [Italics mine.]

Mr. Porter is mistaken as to the ship-carpenter. Mr. Joseph Pearce (Mr. Porter spells it Pierce) was a constructor competent to perform the work, but whose services were not available at that time. Mr. J. W. H. Porter's loquacious ship-carpenter had been warned not to give information to any one as to the plan which had been adopted. On reporting to Constructor Porter he probably thought that he fulfilled his instructions in using the language attributed to him by Mr. Porter. He gave no information as to the extension of the submerged ends of the ship beyond the shield to obtain speed, buoyancy and invulnerability, the only novel feature of the plan—the peculiar and distinctive feature of the *Virginia*.

His position was a trying one, and fully accounts for the extraordinary statements he is said to have made. Naturally, Constructor Porter was much surprised when, on presenting his model, the approved plan was laid before him.

I have every reason to believe the statement, now made for the first time, that "seeing," as he thought, "the failure of Lieutenant Brooke's scheme, Constructor John L. Porter *then* had a model made, took it to Richmond personally, and submitted it to Secretary Mallory."

As to its being like the one he made at Pittsburg in 1847, I can but say that the only reference to that model I have seen is in Constructor Porter's note of his relations to the conversion of the *Merrimac* into an iron-clad, in *Battles and Leaders of the Civil War*.

Mr. Porter says :

"After she had fought her fight and proved her metal, then for the first time, to the knowledge of anybody, Lieutenant Brooke put in an appearance as a claimant for the credit of having projected her, and a communication appeared in the Richmond *Examiner* claiming it for him."

I made no claim, nor did I ask any one to make it for me. No notice was taken of Mr. Porter's publications by the Secretary or myself. I may here recall the fact before mentioned, that in Scharf's *History of the Confederate States Navy*, the true order of date of these publications has been reversed. Of the three the last is put first, and the first last.

Mr. J. W. H. Porter continues:

"And later still, when the real facts of the matter had faded

from his memory, Secretary Mallory was, we believe, persuaded to give credence to his claim."

The absurdity of this suggestion must be apparent to any man who thinks. Mr. Mallory, who was for many years chairman of the Naval Committee of the United States Senate, was in his prime. His knowledge of naval matters, including construction, was broad and accurate. He was deeply interested; was responsible for the adoption of the plan, and would be the last to forget its origin.

Mr. Porter further says :

"Mr. Brooke, I believe, took out a patent for an iron-clad with slanting roof and *submerged* ends like the *Merrimac*.

As neither the Secretary nor myself had noticed Constructor Porter's published claims, I thought it advisable to bring the subject before the examiners of the Patent Office while it was before the public. I therefore applied for a patent, and in order that there should be no ground for dispute as to the correspondence of my specific claim with the original plan, I presented tracings of the identical drawing which Constructor Porter made of my plan, as stated by the Secretary in his report to the House of Representatives of the Confederate States. They were filed May 2, 1862, in the Patent Office.

The drawings accompanying this article are from the patent, reduced to one-fifth of the original scale.

"No. 100.

"THE CONFEDERATE STATES OF AMERICA.

"*To all to whom these letters patent shall come :*

"Whereas John M. Brooke, of Richmond, Virginia, has alleged that he has invented a new and useful improvement in ships of war, which he states has not been known or used before his application; has made oath that he is a citizen of the Confederate States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the treasury of the Confederate States the sum of forty dollars, and presented a petition to the Commissioner of Patents,

signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

"These are, therefore, to grant according to law to the said John M. Brooke, his heirs, administrators or assigns, for the term of fourteen years from the 29th day of July, 1862, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Brooke in the schedule hereunto annexed, and is made a part of these presents.

"In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

<p>"Seal of the Patent Office, (Our First President.) "Confederate States of America.</p>	<p>Given under my hand at the city of Richmond, this 29th day of July, in the year of our Lord 1862.</p>
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<p>"(Signed)</p>	<p>T. H. WATTS, "Attorney-General.</p>
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"Countersigned and sealed with the seal of the Patent Office.

"RUFUS H. RHODES,
"Commissioner of Patents."

Specifications annexed to Patent No. 100, granted to John M. Brooke, July 29, 1862:

"To all whom it may concern:

"Be it known that I, John M. Brooke, a lieutenant in the Navy of the Confederate States, have invented a new and improved form of vessel, to be iron-clad, and if desired (armed) with cannon; and I do hereby declare that the following is a full and exact description thereof, reference being had to the annexed drawings making a part of this specification in which Figure I is a deck plan; Figure II a sheer plan, and Figure III a body plan.

"The nature of my invention consists in so constructing the hull of the vessel that her bow and stern *A* and *B*, Figures I and II, shall each extend beyond the forward and after ends of the shield *C*, which protects crew and guns, sufficiently to give the sharpness necessary to the attainment of high speed, and the buoyancy to support the weight of iron covering the shield and sides of the vessel

without increase of draft. Being submerged, all that part of the hull not covered by the shield is protected by the water from the projectiles of an enemy. The shield proposed for such improved form of vessel is of wood, covered on the exterior with iron, the surface inclined at such an angle as will permit the guns to be worked in the usual manner and yet deflect projectiles impinging upon it. This angle will be between 40° and 50° . The eaves of the shield may be about two feet under water. To divide and prevent the water over the submerged part of the vessel from banking up at the forward or after ends of the shield in going ahead or astern, thereby retarding her progress and perhaps preventing the use of the bow or stern gun, a false bow and stern or tanks are constructed upon the submerged portion of the vessel corresponding more or less in form with the hull below. The false bow and stern may be decked, in which case they should not be so high above water as to interfere with firing of the bow and stern guns. These tanks may be used as reservoirs of water by which the draft of the vessel may be regulated at will. The stem, being submerged, may be fitted as a ram to strike the wooden bottoms of iron-clad vessels. This plan of construction is applicable in plating effectually ships built in the usual manner; it being simply necessary to remove the upper works and to cut them down forward and abaft the shield sufficiently to submerge the ends when down to the load-line, as illustrated in the case of the Confederate States steamer *Virginia*, which vessel was constructed in accordance with the plan herein set forth, furnished by me on the 23rd day of June, 1861, to the Honorable S. R. Mallory, Secretary of the Navy, to William P. Williamson, Chief-Engineer Confederate States Navy, and John L. Porter, Constructor Confederate States Navy, the two latter having been directed by the Honorable Secretary of the Navy, in conjunction with myself, to devise an iron-clad vessel. And this plan was applied to the *Merrimac* in preference to constructing a new vessel of eight or ten feet draft, in consequence of the impossibility of procuring in time boilers and engines suitable to the purpose. The boilers of the *Merrimac* were good, and as the chief-engineer was of opinion that the engines could be speedily repaired, it was considered expedient to apply the plan to her.

“CLAIM.

“What I claim as my invention, and desire to secure by letters patent, consists in so constructing the hull of a vessel that her bow

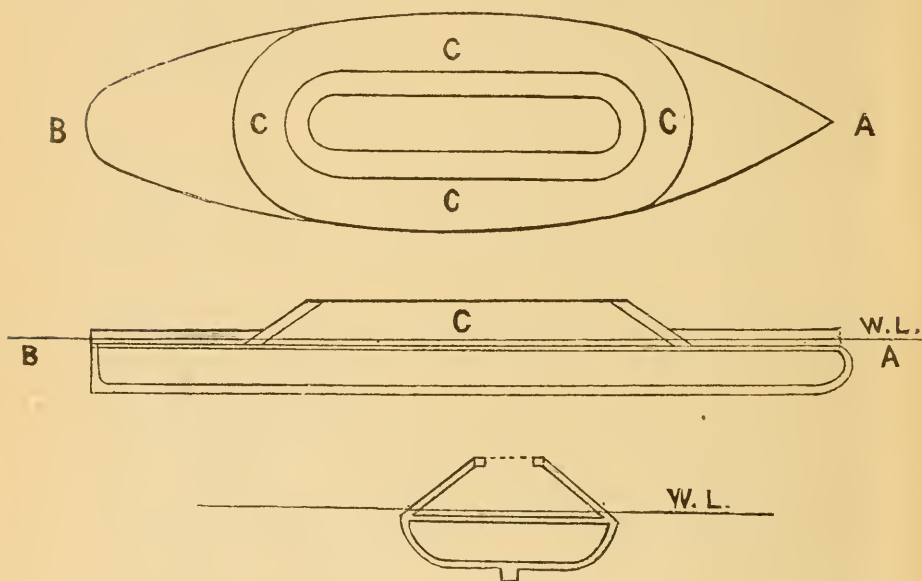
and stern shall each extend under water beyond the forward and after ends of the shield *C*, which protects the crew and guns, sufficiently to give the sharpness necessary to the attainment of high speed and the buoyancy to support the weight of iron applied without an inconvenient increase of draft.

"JOHN M. BROOKE,
" *Lieutenant C. S. Navy.*

"Witness:

"GEORGE MINOR,
" *Commander, C. S. N.*

"CHARLES J. OST."



Mr. Porter continues:

"But his patent was not contested by the builder of the *Merrimac*, because no one would have thought of building such a vessel with submerged ends except as a matter of necessity, for it left the crew no space to exercise."

One might suppose that Constructor Porter, as deeply concerned as he was in maintaining his claim, would have welcomed the opportunity to establish it.

"And no other vessel was built that way by the Confederate States. Subsequent vessels were made after the model which Constructor Porter made at Pittsburg in 1847, with the ends above the water and protected like the roof."

But the model made after the return of the ship-carpenter to the yard, like the one he made at Pittsburg, had its ends under the roof and submerged "just two feet," and no vessels were ever built after *that* model in the Confederate States.

When the *Merrimac*, after conversion, was floated, it was found that in consequence of an error in her computed displacement her ends and eaves could not be submerged to the depth proposed. This was a serious matter, as the additional weights required to bring her down involved an otherwise unnecessary increase of draft.

Constructor Porter says in his *Century* note:

"Her deck ends were two feet below water and not awash, and the ship was as strong and well protected at the centre line as anywhere else; as her knuckle was two feet below her water-line, and was then clamped."

The following letters state the facts:

[EXTRACT.]

"'VIRGINIA,' NORFOLK YARD, *March 5, '62.*

"DEAR BROOKE:

"* * * I hope we will get off on Thursday night. The ship will be too light, or, I should say, she is not sufficiently protected below the water. Our draft will be a foot less than was first intended, yet I was this morning ordered not to put any more ballast in—fear of the bottom. The eaves of the roof will not be more than six inches immersed, which in smooth water would not be enough; a slight ripple would leave it bare except the one-inch iron that extends some feet below. We are least protected where we most need it, and may receive a shot that would sink us; a thirty-two-pounder would do it. The constructor should have put on six inches where we now have one.

"We have taken on board a large quantity of ballast.

"CATESBY AP. R. JONES."

[EXTRACT.]

"CONFEDERATE STATES STEAMER VIRGINIA,

"NORFOLK, *March 7, 1862.*

"MY DEAR BROOKE:

"* * * The edges of our plates are only five inches below
the water. * * *

"R. D. MINOR."

As the vessel lightened, this submergence diminished. Five inches is little more than awash, and it was evident after the action that the guns of the enemy, having no command, could not penetrate the horizontal deck plating of the ends. It was, therefore, not necessary to submerge the ends, provided the sides were properly protected by plating. But as the weight of guns and shields increased, the efficiency of the principle of submerged ends became apparent.

The means at command in the Confederacy were not adequate to the complete development of the principle in sea-going ships. Plates of sufficient thickness to afford protection when placed vertically could not be made; but in 1874 it was applied in England.

The following description of the *Inflexible* is from Chief-Engineer J. W. King's *War Ships and Navies of the World*.

"The *Inflexible*, which was commenced at Portsmouth dock-yard in February, 1874, and launched April, 1876, is a twin-screw, double-turret ship, with a central armored citadel. She was designed by Mr. Barnaby, the Director of Naval Construction at the Admiralty, and at a meeting of the Institution of Naval Architects in London, he describes the vessel in the following language:

"Imagine a floating castle 110 feet long and 75 feet wide, rising 10 feet out of water, and having above that again two round turrets planted diagonally at its opposite corners. Imagine this castle and its turrets to be heavily plated with armor, and that each turret has two guns of about eighty tons each. Conceive these guns to be capable of firing, all four together, at an enemy ahead, astern, or on either beam, and in pairs toward every point of the compass. Attached to this rectangular armored castle, but *completely submerged*—every part being 6 to 7 feet under water—there is a hull of ordinary form *with a powerful ram bow*, with twin-screws and a submerged rudder and helm. This compound structure is the fighting part of the ship. Seaworthiness, speed, and shapeliness would be wanting in

such a structure if it had no addition to it; there is, therefore, an unarmored structure lying above the submerged ship and connected with it, both before and after the armored castle, and as this structure rises 20 feet out of water, from stem to stern, without depriving the guns of that command of the horizon already described, and as it moreover renders a flying deck unnecessary, it gets over the objections which have been raised against the low free board and other features in the *Devastation*, *Thunderer* and *Dreadnaught*. These structures furnish also most luxurious accommodations for officers and seamen. *The step* in advance has therefore been from 14 inches of armor to 24 inches, from 35 ton guns to 80 tons, from two guns ahead to four guns ahead, and from a height of 10 feet for working the anchors to 20 feet. And this is done without an increase in cost, and with a reduction of nearly 3 feet in draught of water. My belief is that in the *Inflexible* we have reached the extreme limit in thickness of armor for sea-going vessels.

"The length of the vessel between perpendiculars is 320 feet, and she has the extraordinary breadth of 75 feet at the water-line; depth of hold, 23 feet $3\frac{1}{2}$ inches; freeboard, 10 feet; mean draught of water, 24 feet 5 inches (23 feet 5 inches forward and 25 feet 5 inches aft); area of midship section, 1,658 square feet; and displacement, when all the weights are on board, 11,407 tons, being the largest man-of-war hitherto constructed. She is, as before described, a rectangular armoured castle. The whole of the other parts of the vessel which are unprotected by armour have been given their great dimensions for the simple purpose of floating and moving this invulnerable citadel and the turrets by which it is surmounted.

"Her immense bulk, unprecedented armament, powerful machinery and the provision for ramming and for resisting the impact of rams as well as of shot and shell, have made it necessary that strength and solidity should enter into every part of the structure.

"The *Inflexible* having been accepted as one of the types of the British future line-of battle ships, two others have been put in process of construction—the *Ajax*, which was laid down at the Pembroke dock yard in 1876; and the *Agamemnon*, commenced at the Chatham in the same year, and launched in 1879. After so full an account of the *Inflexible*, any detailed description of these two sister ships would be a mere repetition."

"The *Colossus* and the *Majestic* * * * two steel sister ships,

are of the same type as the vessels just described, and of dimensions between the *Inflexible* and the *Ajax*."

In Constructor Porter's reply to "Justice," he says:

"Of the great and skillful calculations of the displacements and weights of timber and iron involved in the planning and construction of this great piece of naval architecture, and of her present weights with everything on board, no other man than myself has, or ever had, any knowledge. If he has let him show it; for while public opinion said she would never float, no one save myself knew to the contrary or what she was capable of bearing."

The time came when this knowledge would have been of service to the Confederacy.

Norfolk had fallen, and the brave Tattnall sought to save the *Virginia* by taking her up the James—success depending upon her stability when lightened to a draft of eighteen feet. He applied to Constructor Porter for information.

In Flag-officer Tattnall's triumphant defence will be found this statement [see *Scharf's Confederate States Navy*, p. 235]:

"To the constructor, Mr. Porter, I applied through Paymaster Semple, for information on the subject, who swears positively that he obtained the constructor's written report that the ship could be lightened to even seventeen feet, and would have stability to that draft in the James river. Now, whether Mr. Semple misunderstood Mr. Porter or not, there can be no doubt of the nature of the reply communicated to me through a reliable source, upon which, in the nature of things, having no knowledge of my own, I was obliged to rely. Nor will the positive and reliable testimony thus given be much shaken by Mr. Porter's flippant answer to the question why he did not give full information, "that I never spent a thought on the subject; I was busy; I supposed the officers all knew what they were about, and I gave all the information that was asked of me." It will be recollected he was apprised of the meditated disposition of the ship, and had been asked for written official information on the subject.

I regret that the persistency of Constructor Porter and the indiscretion of his friends have rendered it necessary to make this exposition.

JOHN M. BROOKE.



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